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## PATENT ABSTRACTS OF JAPAN

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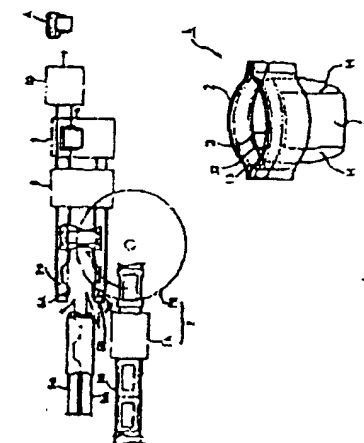
(54) MANUFACTURE OF BRIEFS TYPE DISPOSABLE  
DIAPER

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## (57) Abstract:

**PURPOSE:** To reduce costs by enabling an automatic large-scale production method by forming a back body wrapping part and front body wrapping sections to place a diaper main body thereon orthogonally and to bond it thereto.

**CONSTITUTION:** Optional stock is selected for a back body wrapping section and front body wrapping sections (2 and 3) independently of diaper body 1. In other words, the diaper body 1 is relayed to a turning transfer device 7B behind a suction conveying device 7A and the diaper body 1 is turned by 90° to be supplied to a specified position between belt bodies 2a and 3a of both body wrapping sections perpendicular thereto. Then the diaper body is conveyed to a bonding means 8 to bond it integrally with the belt bodies 2a and 3a of both body wrapping sections. Thereafter, the assembly is conveyed to a folding means 9 to be folded double and side ends of the belt bodies 2a and 2b of both the body wrapping sections are cut while being bonded by a bonding/cutting means 10.



*full translation attached  
No equivs. outside JPO*



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### Specification

#### 1. Title of the invention

Brief-type disposable diaper production method

#### 2. Scope of the patent claim

A brief-type disposable diaper production method involving

a process whereby a water-absorbent material is inserted between an outer sheet and an inner sheet to form a diaper body;  
a process whereby a front waistband and a continuous back waistband having an elastic member at least at the side is formed;

a process whereby the diaper body is overlapped and adhered to both waistbands in the transverse direction;

a process whereby the diaper body is folded double and both waistbands are brought into contact; and

a process whereby the contacted waistbands are cut to prescribed dimensions and the regions near the cuts are adhered to integrate the waist parts at the edge portions

to produce a brief-type disposable diaper from a diaper body and a single waistband.

#### 3. Detailed description of the invention

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### Field of industrial use

The present invention relates to a brief-type disposable diaper production method.

### Prior art

Known technology relating to this type of brief-type disposable diaper production method is disclosed in Japanese Unexamined Patent Application Number S57-77304: "Diaper-brief and Production Method Therefor".

### Problems to be overcome by the invention

The abovementioned technology is disadvantageous in that as there is a cut-out portion in order to form an opening for the wearer to insert his/her legs, it is necessary to add a process for forming the cut-out portion, which raises production costs.

### Means of overcoming the abovementioned problem

The present invention overcomes the abovementioned problem of the prior art and allows the production of brief-type disposable diapers by an automated large-scale production method involving a process whereby a diaper body is formed; a process whereby a back waist part and front waist part are formed; a process whereby the diaper body is overlapped and adhered to both waist parts in the transverse direction; and a process whereby the diaper body is adhered and integrated.

### Embodiment

The present invention is described in detail based on the embodiment shown in the following drawings.

Figures 4 through 6 show an example of a brief-type disposable diaper produced according to the present invention: 1

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represents the diaper body, formed by inserting absorbent material 13 between outer sheet (for example, a water-impermeable P.E. sheet) 11 and inner sheet (for example, water permeable nonwoven cloth) 12.

2 is the back waist part and 3 is the front waist part, and the material for both waist parts 2 and 3 may be selected independently from the material for diaper body 1, although in this embodiment, the same material is used; the double layer having P.E. sheets 21 and 31 as the outside and nonwoven cloth 22 and 32 as the inside is formed, an elastic member sheet (for example, a polyurethane sheet) 23 and 33 is inserted into part thereof, so that at least the upper edge is expandable. It should be noted that it is also possible to have a single layer elastic sheet, to form a completely expandable construction. It should be noted that as waist parts 2 and 3 are preferably of an air-permeable material, it is desirable either to take the nonwoven cloth and elastic sheet, and exclude the P.E. sheet, or, when a P.E. sheet is used, to puncture a plurality of small holes therein. It is also possible to totally or partially affix the elastic member (rubber thread, rubber tape or the like) to a sheet of suitable material, to form an elastic sheet.

Moreover, the hole parts H for the insertion of the wearer's legs are dictated by the width and shape of the diaper body 1 and the width and shape of waist parts 2 and 3, and generally, the shape is such that the holes are toward the front side.

The brief-type disposable diaper production method of the

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present invention will be described below with reference to Figures 1 through 3.

Figure a shows the diaper body 1 production process: absorbent body 13 is placed on outer sheet (back sheet) 11 supplied from outer sheet roller 11a, then inner sheet (top sheet) 12, supplied from inner sheet roller 12a, is supplied thereon, to achieve a sandwich-like insertion of absorbent body 1 between outer sheet 11 and inner sheet 12; then this is transported by the first conveyor device 4 to adhering-cutting device 15, and the circumference is firmly adhered by adhering-cutting device 15, or adhered with adhesive, then cut to the required shape. It should be noted that this process is the same as known diaper production processes, and it is possible to employ a conventional production line for disposable diapers.

It should be noted that the adhering-cutting device 15 comprises two stages: first unit 15a and second unit 15b. In first unit 15a, only adhesion and the cutting of cut-away parts P proceeds, to continuously form diaper body 1, then diaper body band 1a is transported to the next process, and may be cut crosswise to the required dimensions by second unit 15b when in the vicinity of the waistbands 2,3-adhesion process.

Moreover, as there are no cut-away parts P when diaper body 1 is long, it is also possible to achieve the aims of the present invention by only adhering in first unit 15a, then cutting in second unit 15b.

There are various possible shapes for the cut-away parts P, and the shape can be selected according to the shape of the

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waistband 2,3 and the desired shape of hole parts H.

Figure 1(b) shows a waistband 2, 3 production line: elastic member sheet 23a, supplied by elastic member sheet roller 14, is cut along a continuous S-shaped cutting line in the central portion by cutting device 24 to form a pair of bands, back waistband 2a and front waistband 3a.

It should be noted that in the case of the multilayer constructions shown in Figure 3 (outer sheet (P.E. sheet) and elastic member sheet, inner sheet (nonwoven cloth) and elastic member sheet, or outer sheet and elastic member sheet-inner sheet), if elastic member sheet 23a is a band of the same width, and only part of sheet 21a, 22a is adhered, the elastic member sheet can be used effectively without cut-away parts, and holes of the desired shape can be found by selecting a suitable shape for waist part 2,3.

Figure 1(c) integrates the diaper body 1 process of Figure 1(a) and the waistband 2a, 3a process of Figure 1(b), to show the brief-type disposable diaper-forming process: the second conveying device 5a, 5b for waistbands 2a, 3a extends to become the third conveying device 6A and the force conveying device 6B.

Diaper body supply means 7 comprises suction conveying device 7A and rotation conveying device 7B, such that suction conveying device 7A for conveying the diaper body 1 that has been cut to the required dimensions is provided at the end of the first conveying device 4, after which diaper body 1 proceeds onto rotation conveying device 7B, then rotation conveying device 7B rotates the diaper body 1 through 90°, to supply diaper body 1

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transversely to a prescribed position on waistband 2a, 3a.

It should be noted that rotation conveying device 7B receives the diaper body 1 on the conveying surface of suction conveying device 7A then supplies it by rotating  $1/4$  of a rotation while suction continues, then rotating the diaper body 1 that is between third conveying device 6A and fourth conveying 6B through  $90^\circ$ , and diaper body supply means 7 can achieve the aim by means of a suitable conveying means as follows: the adsorption surface of the diaper body is rotated through  $90^\circ$  according to the rotation of a suction rotation drum provided so as to be continuous with suction conveying device 7A, then the diaper body proceeds to a suction conveyor belt, whereupon it is conveyed in a transverse direction with respect to the conveying devices, thereby allowing diaper body 1 to be supplied between waistbands 2 and 3.

Diaper body 1 is then conveyed to adhesion means 8 and adhered to waistbands 2a, 3a by a suitable adhesion means such as an adhesive or heat seal.

It is then conveyed to folding means 9, and folded double by said folding means 9 to superimpose front waistband 2a and back waistband 3a.

The sides of the superimposed waistbands 2a and 2b are adhered and cut to the required shape by adhering-cutting means 10, to yield brief-type disposable diaper A.

#### Advantages of the invention

The present invention yields a brief-type disposable diaper by adhering and integrating a pair of waistbands and a

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diaper body and cutting to the required dimensions and so conventional diaper production lines can be used for the diaper body, the waist parts are supplied as bands and automated mass production is possible due to a belt conveying device, so the brief-type disposable diapers can be effectively produced at extremely low cost.

#### 4. Brief description of the drawings

Figure 1 is an explanatory diagram for the brief-type disposable diaper production method of the present invention: Figure (a) shows the diaper body production process, and Figure (b) shows the waistband-integrating process.

Figure 2 is a diagram of the diaper body, and Figure 3 shows the front waist part and back waist part.

Figure 4 shows an oblique view of a brief-type disposable diaper produced according to the present invention, Figure 5 is plane view and Figure 6 is a cross-sectional view of the diaper body.

- |    |                          |
|----|--------------------------|
| 1  | Diaper body              |
| 2  | Back waist part          |
| 3  | Front waist part         |
| 7  | Diaper body supply means |
| 8  | Adhesion means           |
| 9  | Folding means            |
| 10 | Cutting means            |

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時間表3-17053 (2)

此後いづて本心つを留めし、又又世間の上は同類  
成を離れてもよいものであり、

○ × 田 田

以下諸節に於て其凡例にもとづいて、五節略を  
展開する。

第4図乃至第6図は本発明により製造されたブリーフの使い捨ておむつの一例を示し、1は布おむつではなく、紙製シート（例えば、非吸収性シートであるP.E.シート）11と内装シート12（例えば、吸収性シートである不織布）とで、縫製部13を周縁14に沿って形成されている。

2 は片側開閉式、3 は両側開閉式であり、  
両側開閉式 2・3 は、おむつ本体 1 とは接合して  
任意の厚さを調節できるが、両側式ではおむつ本  
体 1 と両側の翼材を使用し、片側を P、E、シー  
ト 21・31、内翼を不織布 22・32 とする二  
層構造とし、その一側に翼材シート（例えば、  
ポリウレタンシート）23・33 を張り込み、少  
なくとも上端部においては呼吸性のある構造とし  
た。なお、翼材シートの上層構造とし全面防

電シートと土との間に挟み込んだ後、閉着切羽位置15に例へて1道と位置4により形成し、閉着切羽位置16により閉着部を形成する。または閉着部で閉着して所定厚さに切斷する。2台、公知のおむつの製造工程と同様であり、従来の電い型で、おむつの製造ラインを運用することができ、

全所、既設の明渠管渠を、第1ユニット15  
aと第2ユニット15bとの2段階とし、第1  
ユニット15aでは既設とともに明渠管渠の切  
断の工を行なつて、流路改におむつて工を終  
了して、おむつて管渠改修15aを改修工程に送り込み  
、鋼管管渠改修2-3との共用工程の段階におい  
て、第2ユニット15bにより管渠管渠に用定す  
流路に明渠してもよい。

また、おつづ本誌の財政を良方財政とする限り、明細区分が保証しないので、別ユニットとして費用のみを計る。別ユニットとして明確することにより目的を達成することが出来る。

三、 労働組合の組織、発展、及びその活動

に伸縮性のある構造としてもよいことは明かである。なお、図例四の図2・3は、通気孔のある形状が望ましいので、P、E、シートを断いて不規則と規則状のシートとするか、P、E、シートを断いる場合には多次の小孔を通させることが望ましい。2人、適宜な柔軟サートに、ゴム丸、ゴムフープ等の弾性部材を全面に施すことにより弾性を付与して使用に当たり量減などの差を抑入するための内面層には、おむつ本体1の側方及び前後の開口と、前後面の開口の図2・3の形状及び前後の位置により決定され、一般般に衣服類に採用開口する形状とする。

次に、第1回乃至第3回を参照して、本報紙によるブリーフ利用の度で各々の新聞開花を説明する。

a 図は、50℃以下の普通工程を要し、内張シートロール11aより供給される内張シート（バックシート）11上に、吸収体12を配置し、その上に、内張シートロール12aより供給される内張シート（トップシート）12を供給して、サンドイッチ状に吸収体1を内張シート11と内

2・3の月はおよび無量する四口部Hの月は甲に  
より種々のものが運搬されるものである。

第1図のb図に、同様に紙面を2・3の2ラインを用し、紙面をシートロール14より取られた特種紙シート230を順次第24により巾や重量分の連続3次調整で調整して一片の紙材を形成し、一方を背割側取り部は24とし他方を同様に2・3の2ラインとする。

なお、第3図に示すごとく、外装シート（P、E、シート）と内装紙材シート、内装シート（不織布）と内装紙材シート、または外装シートと内装紙材シート内装シートとの多層構造とする場合に、内装紙材シートと3aを同一巾の積体紙材とし、~~第3図~~シート21a・22aの一部にのみ内装布すると、内装紙材シートを効果的に明瞭風分を正しくすることなく使用ができ、且つ図4の第2・3の形状を任意に選択し、所望の形状の開口部を形成することができて好都合である。

第1項のeは、a項の8割つまりは1と、b項のeは残り2割つまりは0.2とを、一併化して、

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アリーフ形に因てなつたとする工程を示し、 $b$ 口を既得の $2a$ ・ $3a$ の第2増減数 $3a$ ・ $3b$ を減して第3増減数 $6a$ と $b$ の第4増減数 $6b$ とする。

測り無通を算入の補正係に、測定手段に依存さ  
 れたおむつ重量を無通するための吸引無通測定  
 7Aを以て、その後方の延向無通測定7Bにおむ  
 つ重量を引加し、延向無通測定7Bでおむつ重  
 量は90度延向させ両側固り延向係は2a・c  
 △形の測定位置に測定位置でおむつ重量を換  
 して、おむつ重量換算手段7を構成する。

なお、従前移送装置7日は吸引移送装置7人の  
製造面上の板ひつ不保1を先行取り、吸引しつ  
つ14個取して第3製造装置6人と第4製造装置  
6日との間に板ひつ不保1を0度位置させて供  
給するものであるが、吸引移送装置7人に接続し  
て吸引駆動ドラムを設けてドラムの周縁に押つ  
て板ひつ不保の吸着面を接觸させて0度位置をま  
たのち吸引移送ベルトに引継ぎ吸引移送ベルトと  
る製造装置と駆動方向に相違しても、不保がひつ

1. 5 月 20 日 15 時 30 分 に開会し、その  
 であり、そのうち 5 月 20 日 15 時 30 分  
 により目的を達成することがある。

区に引き寄せられ、搬送したは、ヒートシール、  
両面糊等の適宜の接着手段により、互に結合し、  
を何となく固り、断面が図 2 a、3 a と視察して一様  
化する。

そのうち、例題みずなへ並進し、例題みず  
なにより二例はに例題にて例題例題り例題例  
2と例題例題り例題例題は3とを例題例題る。

4本のわいたを四隅に張る板は24・24の四  
 角板を、四角の所々に口により覆着するととら  
 に、所定の板に明顯して、ブリーフ貼使い面を  
 ひつゝを完成する。

○ 聖賢の遺風

本発明は、一列の異四り低重合体と、おつち五体とを、両者一様化し、両五す族に明確することにより、ブリーフ形使い図でおつちを形成するものであるから、おつち五体は従来のおつち異四りインを利用することができ、また側四り低重合

10 -- 10 10 10 10

ことで供給されることで、ベルト製造業者による大  
 規模の製造方法とすることができ、そのために  
 コストでブリーフが他社に比べて低く提供できる  
 品質を実現するものである。

#### 4. 國産の競争全展開

第1回は主眼点によるブリーフ形成に際しては、  
つの製造原料を必要視察して、4回は5つまでの  
の製造工程、6回は同様の部との一様化工程をそ  
れぞれ必要とするのである。

第2圖は8℃の本位の気候圖、第3圖は赤道與  
圖の28℃及び赤道與圖の38℃の気候圖である。

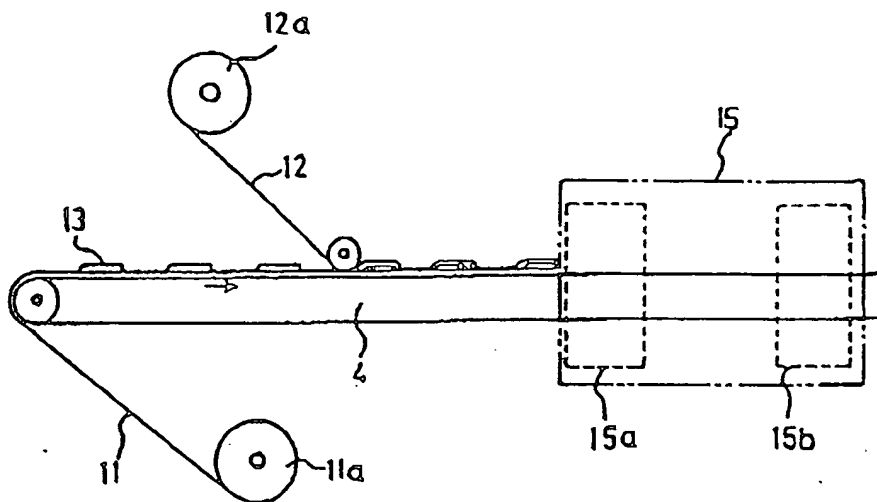
第4図は五稜堀により製造されたブリーフの横  
いびでおよびつの断面図、第5図は平面図、第6図  
は五稜おむつの断面図である。

- 1 -- 一 ぢ ぢ つ 五 絃
- 2 -- 一 質 耶 興 何 々 絃
- 3 -- 一 明 加 興 何 々 絃
- 7 -- 一 ぢ ぢ つ 五 絃 興 何 手 段
- 8 -- ... 茂 田 手 段
- 9 -- 一 ぢ ぢ 入 手 段

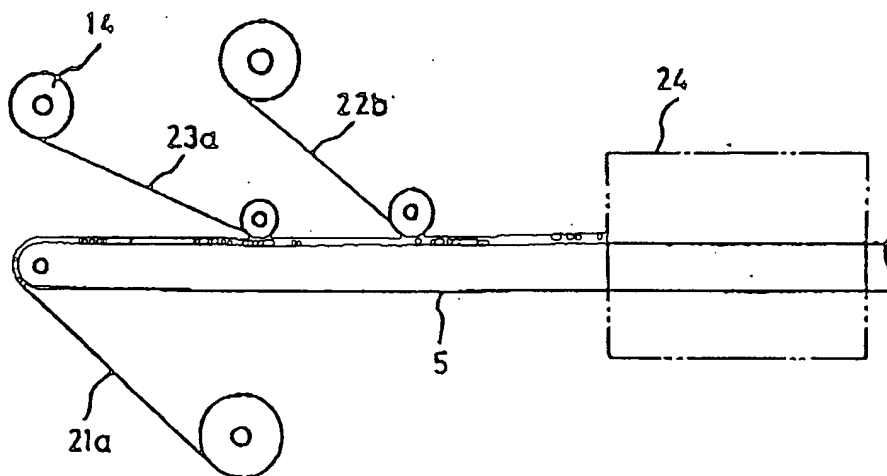
出 版 人 廣 東 會 社 電 允  
代 理 人 亞 細 亞 火 油 公 司

特開平3-176053(4)

第1図 (a)

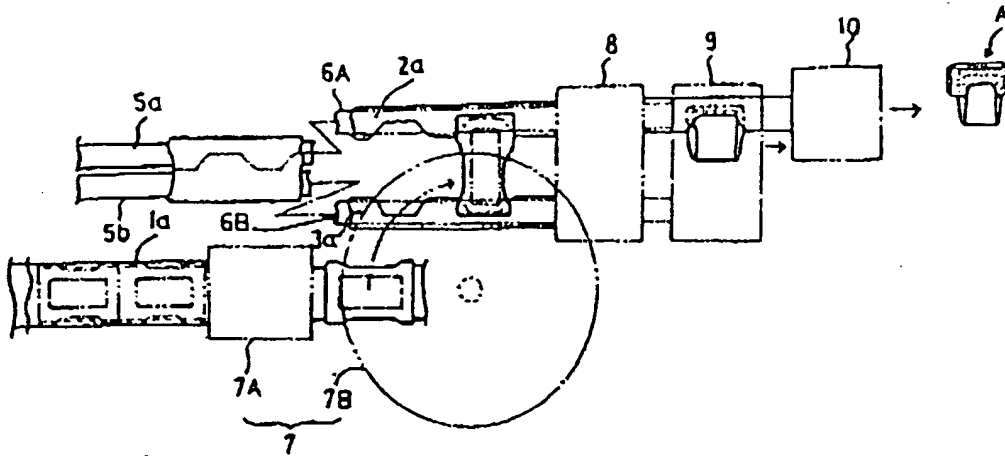


第1図 (b)

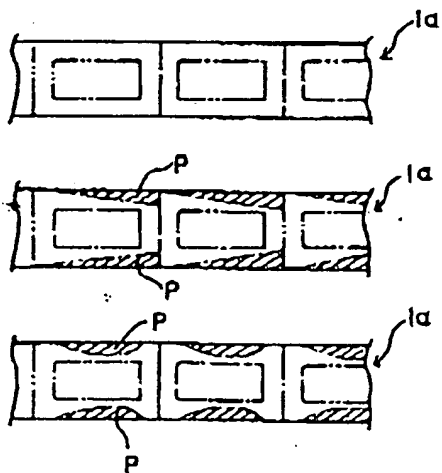


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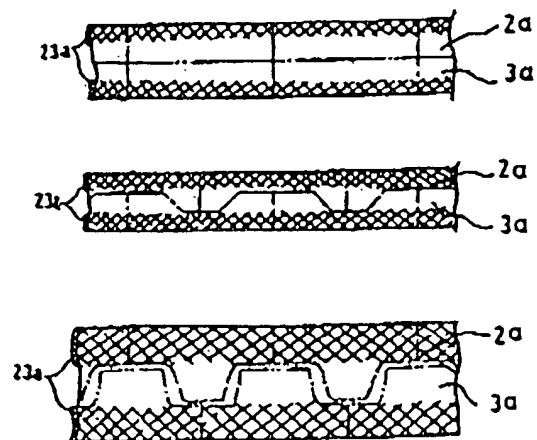
第1図(C)



第2図

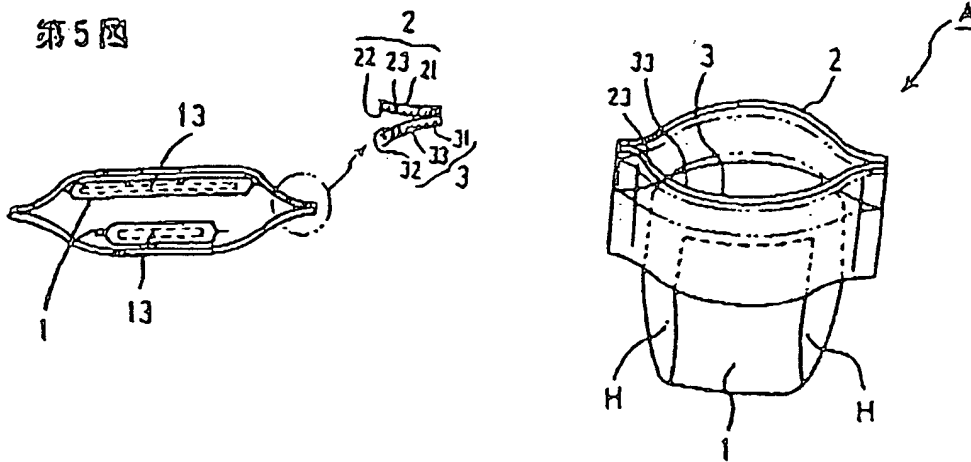


第3図



特許 3-17053 (6)

第 4 図



第 6 図

